

What is claimed is:

1        1.        An apparatus for use in analyzing video images, comprising:  
2                a video signal input for providing a video signal to be analyzed, the video  
3        signal including at least one of successive picture frames and fields;  
4                a video processor coupled to at least one display device and operable to  
5        produce a display of information at least partly from the video input signal;  
6                a controller coupled to the video processor and to at least one control  
7        input, the controller being operable to control a nature of the information  
8        displayed by the video processor;  
9                wherein the video processor is operable to produce selectable data  
10       images for presentation on the display device comprising:  
11               a representation of the full said video signal to be analyzed,  
12               wherein the full said video signal is selectively presented so as to occupy  
13               at least a portion of a display area of the display device;  
14               a zoom image including an area of particular scrutiny in said video  
15               signal to be analyzed, said area of particular scrutiny occupying a  
16               selected part of the video signal and being selectively presented; and,  
17               a report of video data characteristics at least at one point within  
18               said limited area;  
19               and, wherein the video processor is operable selectably to present on  
20       the display device a subset of the selectable data images.

1        2.        The apparatus of claim 1, wherein the video processor has a  
2        plurality of display modes in which at least two of the selectable data images  
3        depict the area of particular scrutiny.

1        3.        The apparatus of claim 2, wherein the video processor has a  
2        display mode wherein the full video image, the zoom image and the report of  
3        said video data characteristics are presented at different parts of the display  
4        device that present progressively smaller parts of the full video signal at the  
5        area of particular scrutiny.

1           4.     The apparatus of claim 3, wherein the report includes a tabular  
2 display of data respecting pixels at the area of particular scrutiny.

1           5.     The apparatus of claim 4, wherein the tabular display of data  
2 includes sample location information and color sample data.

1           6.     The apparatus of claim 5, wherein the tabular display of data  
2 includes a color swatch demonstrating the color sample data.

1           7.     The apparatus of claim 1, wherein the video input is adapted for  
2 processing a digital video signal in increments of at least one frame, the frame  
3 containing one of discrete sample data and discrete color state elements  
4 defining pixels.

1           8.     The apparatus of claim 1, further comprising a video sampler  
2 operable to produce a digital video signal in increments of at least one frame  
3 the frame containing one of discrete sample data and discrete color state  
4 elements defining pixels.

1           9.     The apparatus of claim 1, wherein the video processor comprises  
2 a resizing engine operable to present the input video signal on said part of the  
3 area of the display device, the resizing engine being operable for at least one of  
4 recalculating pixel values, sampling pixel values and reading out selected pixel  
5 values, so as to produce an image in a display area which image occupies less  
6 than a full area of the display device.

1           10.    The apparatus of claim 1, wherein the control input is operable by  
2 a user manually to select from the input video signal an area of particular  
3 scrutiny, and wherein the video processor is operable simultaneously to present  
4 the input video signal on said part of the area of the display device, and a zoom  
5 image of the area of particular scrutiny on the first supplemental display area.

1           11.    The apparatus of claim 1, wherein the selectable data images are  
2   presented in at predetermined areas of the display device providing a first  
3   display area and at least one supplemental display area, and wherein the video  
4   processor allots said predetermined areas to said selectable data images  
5   responsive to at least one of user input selections and data values in the video  
6   signal.

1           12.    The apparatus of claim 1, wherein the video processor is operable  
2   responsive to the control input to define a selection criteria and automatically to  
3   select from the input video signal at least one said area of particular scrutiny  
4   based upon data in the video signal meeting said selection criteria.

1           13.    The apparatus of claim 12, further wherein the controller and the  
2   video process are operable to coordinate between automatic and manual  
3   selection of the area for particular scrutiny, wherein said manual selection  
4   supercedes automatic selection at least for a limited period of time.

1           14.    The apparatus of claim 13, wherein the selection criteria for said  
2   automatic selection include a color gamut value criterion having at least one  
3   threshold value such that a value meeting the threshold value criterion is  
4   selected for particular scrutiny.

1           15.    The apparatus of claim 1, wherein the video processor is operable  
2   responsive to the control input to define a selection criteria and automatically to  
3   select from the input video signal at least one area of particular scrutiny based  
4   upon data in the video signal meeting said selection criteria, and upon user  
5   selection to present on the display device at least one, or selectively two or  
6   three, of the input video signal, a zoom image of the area of particular scrutiny,  
7   and a table of video data characteristics.

1           16.    The apparatus of claim 15, wherein the video data characteristics  
2           include sample data for at least two successive points representing one of  
3           pixels and samples from the area of particular scrutiny.

1           17.    The apparatus of claim 16, wherein the video data characteristics  
2           displayed in the second supplemental display area include numeric values for  
3           identifying said successive points, numeric values for quantifying a video color  
4           characteristic of said successive points and a presentation of a zone having  
5           said video color characteristic.

1           18.    A multi-format monitor for video signal analysis comprising video  
2           signal analysis and processing apparatus operable to compose a display signal  
3           that can controllably contain:

4                a full visual presentation of the video signal in one of said display areas  
5           of an area less than a full area of the display, said visual presentation selectably  
6           including at least one cursor identifying a limited part of the visual presentation  
7           containing at least one pixel defined by one of a sample value and a discrete  
8           minimum size zone,

9                an area zoom in which said limited part is zoomed in size to show a local  
10          area including and surrounding the pixel; and,

11          a pixel data zoom containing a numerical analysis applied to the pixel;

12          wherein the processing apparatus is responsive to at least one of a user  
13          input and an automatic selection to map into the display signal portions  
14          containing one, two or each of said full visual presentation, said area zoom and  
15          said pixel data zoom.

1           19.    The multi-format monitor of claim 18, further comprising:

2                a video signal input for providing a video signal to be analyzed, the video  
3           signal including at least one of successive picture frames and fields;

4 a video processor coupled to said display and operable to produce a  
5 display of information at least partly from the video input signal for said display  
6 areas; and,

7 a controller coupled to the video processor and to at least one control  
8 input, wherein the controller is operable responsive to a user input to control  
9 selection of information displayed by the video processor, and said selection  
10 selectively includes manual selection of a position of the cursor, and automatic  
11 selection of the position of the cursor, based upon user selection criteria.

1 20. A method for presenting video information for analysis of a video  
2 signal represented by one of stored video data and presently processed video  
3 data, comprising:

4 providing a multi-format display having a display area;

5 selectively displaying the video signal as a complete picture at least in  
6 part of the display area, and providing a cursor for identifying a position in the  
7 picture;

8 selectively enlarging and selectively displaying at least in part of the  
9 display area a portion of the picture representing a limited area at and around  
10 the position identified by the cursor, thereby forming a picture image zoom that  
11 is selectively presented in said part of the display area, said limited area being  
12 substantially enlarged compared to a corresponding area in the complete  
13 picture;

14 numerically representing at least one pixel associated with the cursor by  
15 at least one data value associated with one of a position and an appearance of  
16 said at least one pixel, and selectively displaying a tabular presentation of the  
17 data values at least in part of the display area.

1 21. The method of claim 20, further comprising accepting a user  
2 selection and responsive to the user selection composing the display area so as  
3 to include a display presentation chosen from the set consisting of:

4           said complete picture, said picture image zoom and said tabular  
5 presentation;

6           a selected pair of two of said complete picture, said picture image zoom  
7 and said tabular presentation;

8           a selected one of said complete picture, said picture image zoom and  
9 said tabular presentation; and,

10          at least one of said complete picture, said picture image zoom and said  
11 tabular presentation together with an additional information display containing at  
12 least one of graphics and text.

1           22.    The method of claim 32, wherein said picture image zoom is  
2 enlarged so as to present individual pixels as discrete blocks and wherein the  
3 tabular presentation comprises a visual representation of discrete blocks having  
4 appearances that correspond to the data values.

1           23.    The method of claim 21, further comprising controlling the cursor  
2 position both manually and automatically, by providing a user control input for  
3 entering at least one of a manually selected cursor position on the picture and  
4 at least one manually defined data selection criterion, selectively displaying the  
5 manually selected cursor position, and switchably displaying at least one  
6 automatically selected cursor position at which the data selection criterion is  
7 met.

1           24.    The method of claim 23, further comprising visually identifying at  
2 least two cursor positions on at least one of the complete picture and the picture  
3 zoom, wherein at least one said automatically selected cursor position is  
4 identified.

1           25.    The method of claim 24, further comprising graphically displaying  
2 at a portion of the display areas at least one variable that is associated with a  
3 data selection criteria by which the automatically selected cursor position is  
4 determined.